PROGRAMME OF THE CIRP ICME '22 VIRTUAL CONFERENCE

16TH CIRP CONFERENCE ON

INTELLIGENT COMPUTATION IN MANUFACTURING ENGINEERING

13 - 15 JULY 2022, ITALY

OPENING AND GREETINGS BY THE CHAIRMAN

Prof. Roberto Teti, University of Naples Federico II (Italy)

PLENARY SESSION: KEYNOTE PRESENTATION

Emergent Synthesis, Value Creation Models and Towards Service Design
Prof. Nariaki Nishino, The University of Tokyo (Japan)

SPECIAL SYMPOSIUM AND CONFERENCE SESSIONS

- SYMPOSIUM ON "INTERNATIONAL WORKSHOP ON EMERGENT SYNTHESIS – IWES 2022"
- PRODUCTION SYSTEMS & NETWORKS
- MACHINE TOOLS & SPECIAL MACHINES
- ROBOTICS & HUMAN-ROBOT COLLABORATION
- CYBER PHYSICAL SYSTEMS & DIGITAL MANUFACTURING
- CUTTING TECHNOLOGIES
- GRINDING & ABRASIVE MACHINING
- ADDITIVE MANUFACTURING
- COMPOSITE MATERIALS
- FORMING & WELDING
- ASSEMBLY & BATTERY PRODUCTION
- BIOLOGICAL TRANSFORMATION, SUSTAINABILITY & HUMAN FACTORS
- QUALITY ASSURANCE, METROLOGY & TESTING

Symposium on "INTERNATIONAL WORKSHOP ON EMERGENT SYNTHESIS - IWES 2022"

Hardness Control of Automotive Seat Materials Using a Hybrid Design Method of Machine Learning and Optimization
Takashi Tanizaki (Japan)

A biform game in the context of the Circular Food Economy
Sinndy Dayana Rico Lugo, Koji Kimita, Nariaki Nishino (Japan)

Study on Personalized Service Contract: application of digital court
Niiju Mita, Nariaki Nishino (Japan)

Reinforcement learning approach for characterizing a suitable cognitive framework of a dynamic slab-yard control decision-making process
Hajime Mizuyama (Japan)

Dynamic restaurant reservation method using Scheduling Dutch Auction for addressing social distancing
Shota Suginouchi, Yamato Nii, Hajime Mizuyama (Japan) (Japan)

PRODUCTION SYSTEMS & NETWORKS

Assessment Framework for Deployability of Machine Learning Models in Production
Henrik Heymann, Hendrik Mende, Maik Frye, Robert H. Schmitt (Germany)

A modular configuration and management framework for distributed real-time applications based on converged networks using TSN
Stefan Oechsle, Florian Frick, Armin Lechler, Alexander Verl (Germany)

Similarity analysis of engineer-to-order parts based on a knowledge graph
Anna J. Duden, Tobias Koehler, Diana Peters, Julian Redeker, Florian Girkes, Jean Pierre Bergmann, Thomas Vietor (Germany)

Complex Physics with Graph Networks for Industrial Material Flow Simulation
Florian Jaensch, Klaus Herburger, Eva Bobe, Akos Csiszar, Annika Kienzlen, Alexander Verl (Germany)

Functionality test methodology for virtual commissioning of reconfigurable manufacturing systems
Bernhard Wallner, Thomas Trautner, Friedrich Bleicher (Austria)

The use and validation of simulation-based logistics planning to reduce emissions from ferries
Cynthia Hoppe, Steffen Klink, Florian Beuss, Jan Sender, Wilko Fluegge (Germany)

Delivery scheduling in meat industry using reinforcement learning
Alica Hoepken, Hergen Pargmann, Harald Schallner, André Galczynski, Lennard Gerdes (Germany)

Use Case Catalog and Assessment for AI Applications in Intralogistics of Manufacturing Companies
Sospeter Olewe, Melina Finke, Julia Belke, Florian Dyck, Christian Kuerpick (Germany)

Model-based framework for lean information logistics in digital production
Frederic Meister, Pascal Vogl, Johannes Schilp, Andrea Hohmann, Ruediger Daub (Germany)

Design of a Multi-Fidelity Methodology for logistics process planning and Digital Twin integration in the early phases of product development
Gernot Poechgraber, Sébastien Bougain, Thomas Trautner, Niphon Jeepjua, Gerold Bohaty, Friedrich Bleicher (Austria)

Multimethod Simulation for the Risk Management of Product-Service Systems
Enes Alp, Dominik Arnold, Michael Herzog, Bernd Kuhlenkoetter (Germany)

Active transfer learning for data-driven manufacturing process modelling
Gengxiang Chen, Yingguang Li, Charyar Mehdi-Souzani, Xu Liu (China)

Systematics for an Integrative Modelling of Product and Production System
Louis Schaefer, Matthias Guenther, Alex Martin, Mariella Luepfert, Constantin Mandel, Simon Rapp, Gisela Lanza, Harald Anacker, Albert Albers, Daniel Koechling (Germany)

Smart Maintenance Architecture for Automated Guided Vehicles
Dionis Bozhdaraj, Dominik Lucke, Johannes L. Jooste (Germany)

Uncertainty-aware remaining useful life prediction for predictive maintenance using deep learning
Quy Le Xuan, Yeremia G. Adhisantoso, Marco Munderloh, Joern Ostermann (Germany)

A Standardized Description Model for Predictive Maintenance Use Cases
Yannic Wolf, Lennard Sielaff, Dominik Lucke (Germany)

MACHINE TOOLS & SPECIAL MACHINES

Operational modal analysis used to identify dynamic behaviour of machine tools during milling
Jan Berthold, Joachim Regel, Martin Dix, Welf-Guntram Drossel (Germany)

A Hybrid, Distributed Condition Monitoring System using MEMS Microphones, Artificial Neural Networks, and Cloud Computing
Frithjof Dorka, Dominik Lucke, Grant P. Richards (Germany)

Technology framework for system-based employee support in the project planning of special machines
Max Eichenwald, Martin Karkowski, Rainer Mueller (Germany)

Potential of systematically generated training datasets on the accuracy and generalization of AI-based approaches for the automated identification of machine control signals

Philipp Goennheimer, Robin Stroebel, Alexander Rosskopf, Roman Doerflinger, Iris Walter, Juergen Becker, Juergen Fleischer (Germany)

Collision avoidance and adaptive path planning in machine tools by matching live image data with a geometric simulation
Malte Hansjosten, Juergen Fleischer, Markus Frings, Sven Odendahl, Marc Stautner (Germany)

Industry-Oriented System Architecture for Feature-Based Data Management in CNC Machining Processes
Gernot Mauthner, M. Hoffmann, L. Plessing, Thomas Trautner, Friedrich Bleicher (Austria)

A Domain Knowledge-based Approach for Fault Diagnosis
Markus Netzer, Philipp Alexander, Tobias Schlagenhauf, Juergen Fleischer (Germany)

Drives' stiffness of 5-axis machine designs: Evaluation and comparison by Schur complement eigenvalues
Vladimir T. Portman, Emmanuil Kushnir (Israel)

Auto-identification of dynamic axis models in machine tools
Alexander Puchta, Valentin Riegel, David Barton, Juergen Fleischer (Germany)

Calibration of a strain gauge-equipped force measuring unit using machine learning algorithms
Max Richter, Omar Khalifa, Kamil Guezel , Hans-Christian Moehring (Germany)

Lightweight design of a gripping system using a holistic systematic development process - A case study
Johannes Scholz, Jerome Kaspar, Kristian Koenig, Marco Friedmann, Michael Vielhaber, Juergen Fleischer (Germany)

Identical NC-code on Different Machine Tools - Similarities and Differences in Timing and Positioning
Berend Denkena, Benjamin Bergmann, Tobias H. Stiehl (Germany)

Split CFD-simulation approach for effective quantification of mixed convective heat transfer coefficients on complex machine tool models
Tharun Suresh Kumar, Alexander Geist, Christian Naumann, Janine Glaenzel, Steffen Ihlenfeldt (Germany)

A systematic approach for data acquisition and analysis of spindle speed- dependent modal parameters
Florian Woeste, Jim A. Bergmann, Petra Wiederkehr (Germany)

ROBOTICS & HUMAN-ROBOT COLLABORATION

Data preparation for AI-based robot control
Tina Abdolmohammadi, Antje Ahrens, Valentin Richter-Trummer, Marcel Todtermuschke

(Germany)

Investigating the Influence of a Cobot's Average Tool Center Point Speed on Human Work Behavior in a Cooperative Human-Robot Collaboration Assembly Station
Jeremy Askin, Guenter Bitsch (USA)

Modular and reconfigurable simulation environment for evaluating the dynamic behavior of coupled robots performing milling tasks
Maximilian Bryg, Thomas Bertram, Martin Kipfmueller, Jan Kotschenreuther (Germany)

Development of a Dynamic TCP-Positioning Method for a Collaborative Robot Using an Intelligent, Self-Aware Workpiece Carrier
Adrian Burkart, Jeremy Askin (Germany)

Localization and Grasp Planning for Bin Picking of Deformable Linear Objects
Jonas Dirr, Daniel Gebauer, Ruediger Daub (Germany)

A CoBot Reinforcement Framework To Facilitate Assembly Line Workers
Venkata Krishna Rao Pabolu (India)

Towards the modelling of defect generation in human-robot collaborative assembly
Stefano Puttero, Elisa Verna, Gianfranco Genta, Maurizio Galetto (Italy)

Automatic End Tool Alignment through Plane Detection with a RANSAC- Algorithm for Robotic Grasping
Ludwig Vogt, Robert Ludwig, Johannes Schilp (Germany)

CYBER PHYSICAL SYSTEMS & DIGITAL MANUFACTURING

Integration of Legacy Systems to Cyber-Physical Production Systems using Semantic Adapters
Guenter Bitsch, Pascal Senjic, Jeremy Askin (Germany)

Development of a system for building a cloud-based digital twin as an informational assistance system for context-based dynamic configuration of cyber-physical hybrid production systems
Panagiotis Meliadis (Germany)

Intelligent Exploration of Solution Spaces Exemplified by Industrial Reconfiguration Management
Timo Mueller, Benjamin Maschler, Daniel Dittler, Nasser Jazdi, Michael Weyrich (Germany)

A conceptual methodology for the planning of modular and scalable manufacturing cells in the context of Cyber-physical production systems
Patrick Voit, Lucas Schnell, Andrea Hohmann (Germany)

Increasing Resilience of Production Systems by Dynamic Context Modelling and Process Adaption
Tim Wunderlich, Jonas Hansert, Sandro Koch, Robert Heinrich, Thomas Schlegel, Steffen Ihlenfeldt

(Germany)

Digital twin assisted workpiece referencing for compensating the stock deviation of casted parts
Tamas Cserteg, Gabor Erdos, Gergely Horvath, Andras Kovacs (Hungary

A Multicore Control System Architecture as an Operating Platform for Industrial Digital Twins
Lars Klingel, Karl Kuebler, Alexander Verl (Germany)

A Digital Shadow for Design and Operation in Food Production
Dimitris Mourtzis, John Angelopoulos, Nikos Balkamos, Nikos Panopoulos (Greece)

Digital Twins for Predictive Maintenance
Tobias Harries, Matthew Hartnoll, Mohammadmilad Hafezianrazavi, Harry Meek, Aydin Nassehi (UK)

Conception of a data model for a digital twin for context-specific work instructions
Leo Nuy, Judith Rotering, Jonas Rachner, Raphael Kiesel, Robert H. Schmitt (Germany)

Cost estimation approach of a digital twin implementation in industry
Fabio Oettl, Leonard Eckart, Johannes Schilp (Germany)

Towards A Human-Centered Digital Twin
Kai Preuss, Svenja Nicole Schulte, Lukas Rzazonka, Lilian Befort, Carina Fresemann, Rainer Stark, Nele Russwinkel (Germany)

Industrial Digital Twin as a facilitator for business model innovations in the manufacturing industry
Tim van Erp, Elias Ribeiro da Silva, Marianne Stenger (Denmark)

An Optimal Operation Control Framework for Digital Twin Manufacturing Cell
Yaquang Zhou, Guanghui Zhou, Chao Zhang (China)

A Machine Learning Approach for Revenue Management in Cloud Manufacturing
Vincent Adomat, Jonas Ehrhardt, Christian Kober, Maryam Ahanpanjeh, Jens P. Wulfsberg (Germany)

Plug & Produce - A 3D-printed sensor system concept combined with cloud-based process monitoring for data-driven decision support
Valeryia Sidarava, Maximilian Backenstos, Sebastian Rehfeldt, Harald Klein (Germany)

A Concept for Dynamic and Robust Machine Learning with Contex Modeling for Heterogeneous Manufacturing Data
Simon Kamm, Nada Sahlab, Nasser Jazdi, Michael Weyrich (Germany)

Software-defined Manufacturing: Data Representation
Carsten Ellwein, Rebekka Neumann, Alexander Verl (Germany)

Blisk Specific Query Language (BLISQL) - An approach for domain specific data querying in Blisk Manufacturing
Sven Schiller, Markus Landwehr, Georg Vinogradov, Philipp Ganser, Thomas Bergs (Germany)

Text Detection on Technical Drawings for the Digitization of Brown-field Processes
Tobias Schlagenhauf, Markus Netzer, Jan Hillinger (Germany)

CUTTING TECHNOLOGIES

Fault diagnosis of CNC machine-tools for drilling Titanium alloy
Anna Carla Araujo, Marcos Vicente Moreira, Yann Landon (France)

Cooling Lubricant Boundary Conditions for Wet Turning Simulations
Eckart Uhlmann, Enrico Barth, Kaissar Nabbout, Martin Sommerfeld, Benjamin Bock-Marbach, Joerg Kuhnert, Andrey Dovgal (Germany)

A comparative study of tool degradation in the re-drilling of magnesium- based multi-materials through sustainable cooling technologies
David Blanco, Eva Maria Rubio, Marta Marin, José Manuel Saenz de Pipaon (Spain)

Scientific investigations of the cooling lubricant flow in ejector deep hole drilling inside the tool using innovative analysis method
Julian F. Gerken, Danilo Canini, Dirk Biermann, Peter Eberhard (Germany)

Modelling of micro-milling by considering tool run-out and ploughing regime
Cristian Cappellini, Andrea Abeni, Aldo Attanasio (Italy)

Optimisation of Process Parameters during the Turning Operation of Titanium Alloy (Ti6Al4V) using the Taguchi Methodology
Ilesanmi Daniyan, Rumbidzai Muvunzi, Khumbulani Mpofu, Adefemi Adeodu (South Africa)

Digital platform development for CNC machining data acquisition
Michal Demko, Marek Vrabel, Jozef Brindza, Peter Izol, Ildiko Mankova (Slovakia)

Comparison of Modern Tapping Technologies for Lightweight Applications
Nils Felinks, Erik Krumme, Christian Beer, Dirk Biermann (Germany)

A system for automated tool wear monitoring and classification using computer vision
Markus Friedrich, Theresa Gerber, Jonas Dumler, Frank Doepper (Germany)

Multi-stream big data mining for industry 4.0 in machining: novel application of a Gated Recurrent Unit Network
Federica Garghetti, Marco Grasso, Massimo Pacella, Giuseppe Fogliazza, Bianca Maria Colosimo (Italy)

Experimental investigation of the friction behavior under cutting conditions
Nicklas Gerhard, Kilian Brans, Markus Meurer, Daniel Schraknepper, Thomas Bergs (Germany)

Development of a micro reference part for the evaluation of the stability in micro milling operations
Steffen Globisch, Markus Friedrich, Frank Doepper (Germany)

Real-time Tool Prefailure Detection in Conventional and High-Speed Milling Applications
Mahmoud Hassan, Ahmad Sadek, Helmi Attia, Vincent Thomson (Canada)

Simulation-based analysis for the machining of thin-walled, additively manufactured support structures
Eva Jaeger, Jim A. Bergmann, Petra Wiederkehr (Germany)

Interactive Image Segmentation Using Superpixels and Deep Metric Learning for Tool Condition Monitoring
Benjamin Lutz, Lucas Janisch, Dominik Kisskalt, Daniel Regulin, Joerg Franke (Germany)

Simulative Study of the Applicability of Topological Modifications for Gear Skiving
Christopher Janssen, Jens Brimmers, Thomas Bergs (Germany)

Modeling of deep-learning applications for chatter detection in the milling process
Khairul Jauhari, Ahmad Zaki Rahman, Mahfudz Alhuda, Muizuddin Azka, Achmad Widodo, Toni Prahasto, Keiji Yamada (Indonesia)

Validation of a Planar Penetration Calculation for Face Hobbing Generating of Bevel Gears
Melina Kamratowski, Jens Brimmers, Thomas Bergs (Germany)

Tool flank wear prediction using high-frequency machine data from industrial edge device
Deniz Bilgili, Gamze Kecibas, Cemile Besirova, Mohammad Reza Chehrehzad, Gizem Burun, Toprak Pehlivan, Ugur Uresin, Engin Emekli, Ismail Lazoglu (Turkey)

Experimental and Simulative Investigation of Thermomechanical Loads in the Cutting Zone by Machining X30CrMoN-15-1 Steel with CBN tools
Anna Kibireva, Markus Meurer, Daniel Schraknepper, Thomas Bergs (Germany)

Cutting force excursion in turning
Emmanuil Kushnir, Vladimir T. Portman, A. Aguilar, W. Clark (USA)

Quality, efficiency and sustainability improvement in machining processes using Artificial Intelligence
Lourdes Martinez Molina, Roberto Teti, Eva Maria Rubio Alvir (Spain)

Automated Tool Trajectory Generation for Robotized Deburring of Cast Parts Based on 3D Scans
Ingrid Fjordheim Onstein, Magnus Bjerkeng, Kristian Martinsen (Norway)

Investigation of the mechanical workpiece loading during orthogonal cutting AISI 4140 by means of digital image correlation
Markus Meurer, Thomas Bergs, D. Schraknepper (Germany)

Boundary conditions for the application of machine learning based monitoring systems for supervised anomaly detection in machining
Berend Denkena, M. Wichmann, Hendrik Noske, D. Stoppel (Germany)

Visualization of relevant areas of milling tools for the classification of tool wear by machine learning methods
Bjoern Papenberg, Sebastian Hogreve, Kirsten Tracht (Germany)

Influence of low-temperature emulsion on drilling of Inconel 718
Timo Rinschede, Till Overberg, Dirk Biermann (Germany)

Influence of engagement parameters on estimation of tangential cutting force using high-frequency process data of the machine tool
Michal Rytir, JonasRšnnecke, Albrecht Haenel, Petr Kolar, Steffen Ihlenfeldt (Czech Republic)

Experimental Based Chip Formation Simulation for Cold Work Steel AISI D2
Jannis Saelzer, Sebastian Berger, Andreas Zabel, Dirk Biermann (Germany)

Investigation of BTA analogy experiments to determine the influence of different cutting edge designs on the surface integrity
Robert Schmidt, Simon Strodick, Frank Walther, Dirk Biermann, Andreas Zabel (Germany)

Investigation of milling tools for machining Inconel 718 parts produced by selective laser melting
Philipp Schulze, Fiona Sammler, Anja Pfennig, Roland Heiler (Germany)

Calibration and Validation of a 20MnCr5 Material Model for FE-based Analysis of Gear Soft Machining Processes with AdvantEdge
Nico Tross, Benedikt Thimm, Jens Brimmers, Thomas Bergs (Germany)

A Hybrid Approach for Predictive Modeling of KPIs in CNC Machining Operations
Vimala S.Vishnu, Kiran George Varghese, B. Gurumoorthy (India)

An Improved Eclat Algorithm based Association Rules Mining Method for Failure Status Information and Remanufacturing Machining Schemes of Retired Products
Lei Wang, Yan Guo, Yuyao Guo, Xuhui Xia, Zelin Zhang, Jianhua Cao (China)

Particle Tracking Velocimetry in high-speed analysis of coolant flow to validate a numerical model concerning discontinuous drilling of the nickel- base alloy Inconel 718
Tobias Wolf, Michael Fast, Dirk Biermann, Stefan Turek (Germany)

Investigation of the Machinability of CoCr Alloys in Orthogonal Cutting
Christoph Zachert, Markus Meurer, Daniel Schraknepper, Thomas Bergs (Germany)

GRINDING & ABRASIVE MACHINING

Quality Assurance of Composite Grinding

Osman Bodur, Eva M. Walcher, Jens Brier, Stephan Krall, Friedrich Bleicher, Alexandru Sterca, Johann Sauprigl, Harald Peherstorfer (Austria)

Approach for the numerical simulation of the machining behavior of WC- Co cemented carbide during grinding
Alexander Dehmer, Sebastian Prinz, Peter Breuer, Sebastian Barth, Thomas Bergs (Germany)

Automatic time series segmentation and clustering for process monitoring in series production
Jonas Dumler, Stephan Faatz, Markus Friedrich, Frank Doepper (Germany)

Practical analysis of productivity of grinding tools in the process of internal generating gear grinding
Noritaka Fujimura, Patricia de Oliveira Loehrer, Thomas Bergs, Alexander Spatzig (Japan)

Simulation of material removal behavior during grinding of fiber reinforced non-oxide ceramics (SiC/SiC)
Sebastian Prinz, Alexander Dehmer, Christopher Schrenker, Sebastian Barth, Thomas Bergs (Germany)

Effects of abrasive waterjet cutting on surface properties of hardened steel
Nermin Redzic, Philipp Kieweg, Joachim Regel, Martin Dix (Germany)

Modeling the compliant micro polishing tools wear via pin on disk tribometer
Reza Farshbaf Zinati, Giuliano Bissacco (Iran)

ADDITIVE MANUFACTURING

Support-Free-Material Path Generation for DED Processes from Facetized Data
Lewis Andurand, Vincent Hugel, Sébastien Campocasso, Matthieu Museau (France)

An experimental investigation of selective laser process parameters on aluminium alloy (AlSi12)
Alliance G. Bibili Nzengue, Khumbulani Mpofu, Ntombi Mathe, Ilesanmi Daniyan, Rumbidzai Muvunzi (South Africa)

Porosity Examination of Additive Manufactured Parts and Effects of Infill Parameters
Osman Bodur, Eva M. Walcher, Alexandru Sterca, Clemens Sulz, Roxana-Anamaria Calin, Numan M. Durakbasa, Friedrich Bleicher (Austria)

Additive manufacturing of copper with a single mode IR fiber laser
Flaviana Calignano, M. Pavese, Abdollah Saboori, Manuela Galati, Luca Iuliano (italy)

Spatio-temporal Analysis and Monitoring of Temperature for Extrusion-based Additive Manufacturing Processes
Bianca Maria Colosimo, Fabio Caltanissetta, Emanuele Carraro (Italy)

DfAM: Application of the design rules in the early design stages
Jelena Djokikj, Tatjana Kandikjan (Republik of North Macedonia)

Modelling the thermal behaviour of Ti6Al4V sintered powder bed in electron beam powder bed fusion (EB-PBF)
Galati Manuela, Elena Campagnoli, Valter Giaretto, Luca Iuliano (Italy)

Procedure for Identifying the Thermal Reaction of Defects in Solidified Layers during the PBF-LB/M Process using Active Thermography
Fabian Herzer, Johannes Rau, Christian Seidel, Johannes Schilp (Germany)

Investigation of the Influence of the Powder Gas Flow Rate onto the Build Quality of Cold Spray Copper Alloy Parts
Philipp Kindermann, Martin Wunderer, Maximilian Binder, Julius Arnhold, Ismail Uensal, Christian Seidel, Georg Schlick (Germany)

Multi-axis two photon polymerization machine and software concept for the manufacturing of aspheric lenses on non-planar substrates
Daniel Kurth, Simon Ristok, Sopie Ruehle, Alexander Verl, Harald Giessen (Germany)

Effect of powder atomising route on the surface quality and mechanical performance of AISI 316L samples produced via laser powder bed fusion process
Erika Lannunziata, Niccolò Zapparoli, Luca Iuliano, Abdollah Saboori (Italy))

Effect of printing orientation on mechanical properties of components in stainless steel obtained using the Bound Metal Deposition technology
Tiziano Bellezze, Archimede Forcellese, Pietro Forcellese, Tommaso Mancia, Michela Simoncini (Italy)

Increasing of production rate of laser powder bed fusion systems
Vincenza Mercurio, Flaviana Calignano, Marco Viccica, Luca Iuliano (Italy)

Preliminary test on the effect of direct annealing on additive manufactured PEEK bending properties
Luigi Morfini, Maria Grazia Guerra, Fulvio Lavecchia, Roberto Spina, Luigi Maria Galantucci (Italy)

On the numerical modelling of friction stir spot processing of selective laser manufactured AlSi10Mg alloy blocks
Alexandra Morvayova, Giuseppe Casalino, Fabrizia Caiazzo (Italy)

Method for evaluating the monetary added value of the usage of a digital twin for additive manufacturing
Fabio Oettl, Sebastian Hoerbrand, Tobias Wittmeir, Johannes Schilp (Germany)

Physics-informed machine learning for defect identification in fused filament fabrication additive manufacturing
Tugrul Ozel, Deepak Malekar, Shreyas Aniyambeth, Pu Li (USA)

Systematic evaluation of the part properties through combination of different greyscales in one part in High Speed Sintering

Daniel Pezold, Johann Schorzmann, Paula Waldmueller, Jan Kemnitzer, Frank Doepper (Germany)

Effect of process parameters on AISI 316L single tracks by laser powder directed energy deposition
Mirna Poggi, Alessandro Salmi, Eleonora Atzeni, Luca Iuliano (Italy)

Hybrid additive and subtractive manufacturing: evolution of the concept and last trends in research and industry
Manuel Angel Rabalo, Eva Maria Rubio, Beatriz de Agustina, A. M. Camacho (Spain)

Analysing energy consumption of selective laser melting process steps based on non-intrusive electrical measurement clusters
Bharathwajanprabu Ravisankar, Kashan Syed, Eva Jaeger, Petra Wiederkehr, Christian Rehtanz (Germany)

Spatial Annotation of Time Series for Data Driven Quality Assurance in Additive Manufacturing
Raven T. Reisch, Matteo Pantano, Lucas Janisch, Alois Knoll, Dongheui Lee (Germany)

Prescriptive Analytics - A Smart Manufacturing System for First-Time- Right Printing in Wire Arc Additive Manufacturing using a Digital Twin
Raven T. Reisch, Lucas Janisch, Joaquin Tresselt, Tobias Kamps, Alois Knoll (Germany)

Evaluation of the effective thermal conductivity of the unmelted powder particles during the electron beam powder bed fusion (EB-PBF) process
Giovanni Rizza, Manuela Galati, Luca Iuliano (Italy)

Improving the surface quality and mechanical properties of additively manufactured AISI 316L stainless steel by different surface post-treatment
Amir Behjat, Erika Lannunziata, Elzbieta Gadalinska, Luca Iuliano, Abdollah Saboori (Italy)

Multiscale modelling of additive tensile test specimens
Roberto Spina, Bruno Cavalcante, Silvia Di Rosa, Giulio Morandina, Alessandro Mellone (Italy)

Prosthesis customization in maxillofacial surgery by means of Additive Manufacturing
Giuseppe Vecchi, Eleonora Atzeni, Alessandro Salmi, Luca Iuliano (Italy)

A fuzzy-based decision-making approach for metal additive manufacturing process optimization
Gennaro Salvatore Ponticelli, Simone Venettacci, Flaviana Tagliaferri, Oliviero Giannini, Stefano Guarino (Italy)

An additively manufactured fractal structure for impact absorption applications
Marco Viccica, Manuela Galati, Flaviana Calignano, Luca Iuliano (Italy)

Application of a product-centred process-independent meta-model for multi-stage production data to enable predictive quality for additive manufacturing
Ronja Witt, Anna-Lena Knott, Simon Cramer, Robert H. Schmitt (Germany)

COMPOSITE MATERIALS

Numerical analysis of flexural behaviour of nautical components in CFRP composite
Iacopo Bianchi, Archimede Forcellese, Silvio Pappadà, Andrea Salomi, Giuseppe Zanzarelli (Italy)

Preliminary study of lightweight fibre-ceramic composite structures for the ballistic protection on military vessels
Mohamed Chairi, Jalal El Bahaoui, Tiziana Alderucci, Federica Favaloro, Chiara Borsellino, Guido Di Bella (Italy)

3D printed molds for manufacturing of CFRP components
Iacopo Bianchi, Serena Gentili, Luciano Greco, Tommaso Mancia, Michela Simoncini, Alessio Vita (Italy)

Hybrid-ML for Parameter Prediction in Production
Jonas Dorissen, Henrik Heymann, Robert H. Schmitt (Germany)

Drilling-induced delamination measurement using a novel digital image processing algorithm
Tamas Lukacs, Csongor Pereszlai, Gergely Magyar, Norbert Geier (Hungary)

Impact assessment of fillers on the machinability of carbon fibre reinforced polymer composites
Gergely Magyar, Daniel Istvan Poor, Tamas Lukacs, Péter Tamas-Bényei, Norbert Geier (Hungary)

Effects of fibre misalignment on the stability of double-curved composites
Jan-Lukas Stueven, Sebastian Heimbs, Carsten Schmidt (Germany)

Automated fiber placement: The impact of manufacturing constraints on achieving structural property targets for CFRP-stiffeners
Berend Denkena, Peter Horst, Sebastian Heimbs, Carsten Schmidt, Lisa Reichert, Tim Tiemann (Germany)

FORMING & WELDING

Approach for inline monitoring and optimization of a thermoplastic injection molding process with Bayesian networks taking the example of the quality feature weight
Ilona Borchardt, Jonas Krauss, Jonathan Lambers, Jakob Schueder (Germany)

Control of material flow using measuring methods for wrinkle and crack detection during rotary draw bending
Linda Borchmann, Christopher Heftrich, Jonas Knoche, Michael Schiller, Bernd Engel (Germany)

A review on micro-forming technologies: characteristics and trends for their industrial application
Marta Marin, Jorge Ortega, Amabel Garcia, Eva Maria Rubio (Spain)

Prediction and control of injection molded part weight using machine learning - A literature review

Jonas Krauss, Ilona Borchardt (Germany)

Data-driven quality monitoring of needle winding processes in electric motor production using machine learning techniques
Andreas Mayr, Fabian Scheffler, Robert Fuder, Dominik Kisskalt, Tim Raffin, Joerg Franke (Germany)

Effect of tool tilt angle on mechanical resistance of AA6082/AA5083 friction stir welded joints for marine applications
Guido Di Bella, Tiziana Alderucci, Federica Favaloro, Chiara Borsellino (Italy)

Cyber-Physical Optimization of Production Processes Using Two AIs: A Robot-Guided MAG Welding Use-Case
Peter Burggraef, Fabian Steinberg, Philipp Nettesheim, Marian Vedder, Gerald Kolter (Germany)

Laser welding of AA2065 and AA7021Al Alloys using purpose made welding wires
Siri Marthe Arbo, Kristian Martinsen, Jo Aunemo, Nora Dahle (Norway)

Quality Monitoring of RSW Processes - The impact of vibrations
Alexios Papacharalampopoulos, Kyriakos Sabatakakis, Panagiotis Stavropoulos (Greece)

Potentials of Few-Shot Learning for Quality Monitoring in Laser Welding of Hairpin Windings
Tim Raffin, Andreas Mayr, Marcel Baader, Nadine Laube, Alexander Kuehl, Joerg Franke (Germany)

A methodology for multi-object optimization of laser/MIG hybrid welding process
Nicola Contuzzi, Mariia Rashkowets, Giuseppe Casalino (Italy)

ASSEMBLY & BATTERY PRODUCTION

Virtual Assembly for Engineering - A Systematic Literature Review
Florian Dyck, Harald Anacker, Roman Dumitrescu (Germany)

Software support for the development of flexible plant technology in highly automated and high-rate body-in-white production
Rayk Fritzsche, Antje Ahrens (Germany)

Automated Design of Gripper Systems for Electrical Connectors
Daniel Gebauer, Jonas Dirr, Ruediger Daub (Germany)

Automated CAD-based sensor planning and system implementation for assembly supervision
Johann Gierecker, Florian Kalscheuer, Daniel Schoepflin, Thorsten Schueppstuhl (Germany)

Reducing commissioning efforts for hybrid assembly systems using a data-driven approach
Florian Kalscheuer, Julian Koch, Thorsten Schueppstuhl (Germany)

Concept and Integration of Knowledge Management in Assembly Assistance Systems

Dennis Keiser, Christoph Petzoldt, Vivien Walura, Sebastian Leimbrink, Michael Freitag (Germany)

Time-based occupancy planning method for assembly areas at production site of large structures
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